We claim:

1. An inorganic intercalating nano-catalyst for the copolymerization of carbon dioxide and epoxide to form poly(alkylene carbonate) prepared by intercalating zinc dicarboxylate into matrix with layered structure .

2. The inorganic intercalating nano-catalyst of claim 1 wherein the weight ratio of said zinc dicarboxylate to said inorganic matrix is from 1/1 to 1/20.

3. The inorganic intercalating nano-catalyst of claim 1 wherein said intercalating agent zinc dicarboxylates are selected from the group consisting of zinc succinate, zinc glutarate, zinc adipate, zinc pimelate and zinc suberate, and the mixture thereof.

4. The catalyst of claim 1 wherein said inorganic matrices are selected from the group of inorganic mineral particles with layered structure consisting of montmorillonite, mica, vermiculite and kaoline.

5. A process for preparation of a inorganic intercalating nano-catalyst for the copolymerization of carbon dioxide and epoxides to form poly(alkylene carbonate)s comprising:

delaminating the layered matrix with diluted acid, then calcining at 600-1000 °C in a muffle furnace for 2~10 h prior to intercalation;

dissolving zinc dicarboxylate in strong polar solvent under pH value from 1.0 to 4.0, then introducing calcinated acidic matrix into the reaction system to perform intercalation 30～120 minutes at the temperature from room temperature to 80 °C; and

removing the solvent and improving the crystal of the intercalating nano-catalyst by refluxing in less polar solvent.

6. The process of claim 5 wherein said strong polar solvents are selected from the group consisting of methanol, glycol, ethylene glycol monobutyl ether, ethylene glycol

monomethyl ether, N, N'- dimethyl formamide, sulfolane, imidazole, quinoline, water and N-cyclohexyl pyrrolidine; and adjusting pH value from 1.0 to 4.0 with diluted acid.

7. The process of claim 5 wherein said less polar solvents are selected from the group consisting of benzene, toluene and xylene.